

What is a pure soap?

WHAT IS A PURE SOAP?



WITH NOTES

ON THE

INJURIOUS EFFECTS OF
IMPURE SOAPS.

—
COLLATED FROM

Standard Authorities.



THE manufacture and use of soap dates from an early period, but like many other operations of household origin, it long remained an empirical method, the chemistry of the process being entirely unknown. Accurate knowledge of the changes that take place in saponification dates only from 1813, when Chevreul, a French chemist, who is still living, at an advanced age, made a thorough investigation into the subject, determined the composition of fats and the effects produced on them by the action of caustic alkalies. We need not be surprised at the comparatively late period at which so important a series of facts became understood, when we are reminded that it was near the close of the last century before any approach to exact analytical chemistry was attained.

Bearing in mind, then, the recent date of our knowledge in this matter, we are prepared to recognize that while the general chemistry of soap-making is understood, there are important points, which are not widely known or appreciated. The varying uses to which soap is applied renders it necessary that it should be prepared by exact methods, capable of yielding the desired article. The older processes handed down for centuries in the traditions of unlearned soap-makers will not suffice for the specific purposes of to-day. The operation must be conducted in such a manner that a product of known

and invariable composition will result. It is obvious, then, that to bring this art to its full perfection, a careful chemical study must be made of all the materials employed and of the changes taking place in the process.

Preparation of Soap.

NATURE OF FATS:—Under the term *fats* and *fixed oils* are included a number of bodies, animal and vegetable, which differ considerably in quality and properties, but are closely analogous in composition. When pure, they are neutral, and undergo but little change.

The commercial forms of these bodies are very numerous, and they are not only subject to extensive adulteration and substitution, but great variation in quality is observed, even in the unadulterated samples. In many cases, fragments of vegetable and animal tissue remain in the fat, and soon undergo decomposition, not only becoming offensive and irritating, but causing the fat to become "*rancid*," that is, developing free acid. When such impure fats are converted into soap their irritating and offensive qualities are not removed.

ALKALI:—The quality of the alkali used in the manufacture of soap should be also carefully noted. It should be free from lime and other earthy bases, for these will form with the fat, insoluble and useless bodies. If the alkali has been exposed too freely to the air, it will contain carbonates, which will be retained in the soap, and be decidedly irritating.

SAPONIFICATION:—It is, however, in the process of saponification itself that the art of the scientific soap-maker is displayed. When caustic alkali (soda or pot-

ash) is brought in contact with, say, olive oil, a mutual action takes place, by which the oil loses its greasiness, and becomes miscible with water; at the same time the alkali loses its caustic and corrosive properties. The action is a true chemical change; both bodies are converted into new substances. The oil is decomposed; one portion of it unites with the active ingredients of the alkali, producing *soap*, while the other portion combines with certain elements that were in the alkali, and produces *glycerin*. Glycerin, it must be noted, does not pre exist in the fat, but is produced by the saponification.

Common Defects in Soap.

The above is a brief statement of the formation of soap; but in actual practice many difficulties are encountered. Unless the proportions of oil and alkali are accurately adjusted, there will be an excess of one or the other, and the soap will be either greasy or caustic. A deficiency of alkali would be more easily recognizable than an excess. It happens, therefore, that the most common defect in soaps is the presence of small amounts of free alkali. This defect is often overlooked, but is one of the most serious errors in soap-making. When any soap is treated with cold water a slight decomposition takes place, and upon this the detergent or cleansing action depends. It is a very common but serious mistake to suppose that the detergent action depends on the free alkali present; on the contrary a properly made soap is practically neutral.

A D U L T E R A T I O N S O F S O A P :—In addition to these defects in manufacture, soaps are very largely and frequently

adulterated. Many samples contain great excess of water and are weighted with *gelatine, starch, sugar, talc, china-clay and terra alba*. The use of *low grade* and *impure fats*, and the substitution of *rosin* and *silicate of soda* are also common practices. Highly colored soaps are objectionable as they contain either *insoluble* or *irritating* coloring materials. Appearance and price are no guide to quality. Much of the so-called fancy or toilet soap is fully as injurious to the skin or complexion as the rough laundry soaps. Transparent soaps and other high-priced forms are often serious offenders in this respect. Nor can any reliance be placed on the supposed standard quality of the article. For instance, it is commonly supposed that the term "Castile" is a guarantee of the excellence and purity of a soap, whereas it is now a mere trade-term which does not give any assurance of the quality or source of the article. Similarly the terms "Windsor" or "Elderflower" convey in themselves no definite information. Castile is now made in different parts of the world, and from different materials. Cotton-seed oil is sent abroad and comes back in the form of so-called Castile soap. Much of this imitation, and some of the true Castile, contains free alkali and alkaline carbonates and is decidedly unfit for toilet uses. Mottled soap contains metallic impurities, and is also objectionable.

PERFUMES IN SOAP:—It is possible to add to soap suitable perfumes, but as these are expensive, many *coarse* and *impure essential oils* are used. Among these is a body called "oil of myrbane" or "artificial oil of bitter almonds" which resembles the genuine oil only in odor and is a local irritant and poison. Inferior essen-

tial oils often acquire the flavor of turpentine; all such are unsuited for toilet soaps.

Action of Soap on the Skin.

Many persons, even physicians, sometimes fail to appreciate the delicacy of the structure of the skin, and the important functions which it performs. It is very highly supplied with blood-vessels and nerves, and its excretory glands are numerous and active. All dermatologists are agreed that by the use of impure soaps, skin diseases may be produced, and already existing disease be aggravated; and further, that in the treatment of such affections a pure and non-irritating soap is of the greatest assistance in cleansing the surface. It is also important that soap should contain no insoluble mineral matter, which would obstruct the pores of the skin and interfere with the excretory function.

INFANTS' SOAPS:—These principles apply to all cases, but with especial force to the use of soap on the *skin of infants*. In these we have an exceedingly delicate and highly active skin, and the child being too young to express its feelings intelligibly, great harm may be done by the use of an irritating soap or one containing insoluble matter. Those having the care of children should not allow themselves to be misled by the attractive or peculiar appearance, form or color of the so-called infant soaps, but should use only such as are known to be pure and properly made.

Surgical Uses of Soap.

The necessity of *extreme cleanliness* is now a demonstrated fact in operative surgery. The hands of the

surgeon, the instruments used, and the parts operated upon must be most carefully cleansed. For the sensitive, delicate and highly absorbent surface of a wound or abrasion, only the *purest materials* are permissible. Especially necessary is it to avoid the use of a soap containing insoluble matter, free alkali or impure fats.

Soap as a Cause of Skin Disease.

The irritating effect on the skin of even small amounts of caustic alkali is well known; but there is good reason to believe that this effect is more decided than is usually supposed. For a number of years much has been said in medical journals as regards the poisonous action of the dye-stuffs contained in clothing worn next to the skin. Reports of serious eruptions, apparently tracable to this source have been often published, and many medical men are convinced of the dangerous character of colored stockings and such articles. In controversy, however, of this view we have some striking facts. It is well established that workmen engaged regularly in the manufacture of these dyes are not so affected, and from time to time experiments have been made by wearing articles colored with some of the most objectionable dyes, the result being that no irritating action was observed. The explanation of this apparent contradiction between clinical observation and experiment will be found in the influence produced on the skin by the ordinary soaps which are used for toilet purposes. These, by reason of the caustic alkali, carbonate of soda, and other injurious ingredients produce so much irritation and excoriation of the skin that not only is an incipient inflammation developed, but the protective epidermis being in part removed, the absorption of any poisonous

matter is greatly facilitated. Furthermore, there is no doubt that the local cutaneous inflammation observed in many of these cases are due directly to the effect of the impure soap, and then aggravated by the contact of the chemical substances in the dye stuff. In this connection the injurious action of impure fats and adulterations must not be overlooked.

Medicated and Antiseptic Soaps.

For many years it has been the practice to prepare so-called medicated soaps, especially for application in skin affections. In spite, however, of the extent to which these preparations have been used and the variety of forms which have been proposed, they have given but limited satisfaction in clinical work. Within the last year or so, especially, there have been a number of such soaps put on the market. There are serious chemical objections to most of these and there is much disagreement among medical authorities concerning their usefulness. In soaps made with corrosive sublimate or other mineral substances, a series of decompositions occur by which these bodies are precipitated in the insoluble form and rendered inert. The value of a properly made soap in skin affections is undoubted, and equally certain is it that local applications of medicinal substances are of benefit. It is, however, by many practitioners thought to be a mistake to attempt to combine these two methods in one application. Leaving out of consideration the difficulty just alluded to the incompatibility of many therapeutic agents with soap there is the inherent incongruity in the intention for which the soap is used and the purpose for which the medicament is employed. Soap is essentially a cleansing agent;

by facilitating the free action of the skin, it maintains it in good health, but its use in the treatment of cutaneous troubles is to remove the normal and abnormal accretions and prepare the surface for the more efficient effect of the remedies applied. It is in the very nature of the action and function of soap that it should be retained only so long on the skin as may be required to produce its detergent effect; when this has occurred it should be removed, for if allowed to remain it becomes an interference with the functions of the skin : on the other hand the intention of the application of the therapeutic agents is that they shall be allowed to remain long enough on the skin to produce, either locally or by absorption, their effects. From these considerations it will be seen that an excellent method is to employ at first a perfectly pure and neutral soap as a cleansing agent, and then having removed the soap and accretions, apply the medicament to the skin. When the application has become exhausted or foul it may be removed by re-application of the soap, and renewal of the remedy on the cleaned skin.

Another objection to the incorporation of foreign matters in soaps is, that they may either in themselves or by their action on the soap-mass give rise to decompositions and fermentations which modify the action of the combination. Even in those cases in which the direct effects of a small amount of caustic alkali is indicated, it is far better to attain this by the use of a perfectly neutral soap, to which has been added a known amount of alkali, than to rely upon so-called alkaline soaps in which the percentage and character of the alkali must be always uncertain. As remarked above, it is a mistake to suppose that the detergent action of

soap depends on the free alkali; a neutral soap will accomplish this result perfectly in the majority of cases and is the only kind suited to the healthy skin.

Conclusions.

Summing up, then, the views presented in this article we find that the preparation of a good soap involves the following conditions:

The fats or oils must be pure and of constant composition.

The process of saponification must be carefully conducted by intelligent and experienced persons.

The alkali should be of superior quality, known strength and free from lime or carbonate of soda.

The product should be ascertained by actual test to be free from caustic alkali or other irritating substances.

No adulterations should be present; excess of water, addition of antiseptic materials, insoluble powders, or agents intended for therapeutic effects are all foreign to the purposes for which soap is used, and interfere with its functions.

No form of soap should be used unless its purity is duly attested by an analytical report, which shall be verified from time to time on recently manufactured samples.

While a pure soap is essential in all cases, it is eminently indicated in the case of infants and children, and to sensitive, inflamed or diseased skins.

The "ALTHENE SKIN SOAP" is offered to the medical profession as an article possessing all the qualities of a perfect soap according to the principles here laid down:

in fact is the result of the study of the science of the manufacture of soap. In its production the highest skill is brought to bear, and only the purest materials are employed. It constitutes in the condition in which it is put upon the market, a pure soap-mass, free from caustic or other irritating substances, perfectly neutral, unadulterated and adapted to use on the most delicate and sensitive skin.

Although the process of manufacture is so conducted as to produce a superior article, yet to ensure absolute accuracy in this respect it has been carefully analyzed by a professional chemist, whose certificate is appended.

In order that this soap shall be maintained at an *exact standard of purity and excellence*, samples of each lot made are submitted to Dr. HENRY LEFFMANN, "Hygienist and Food Inspector of the Pennsylvania State Board of Agriculture" for analytical examination; and until the purity of the article is ascertained, it is not put on the market.

We can, therefore, assert, without fear of contradiction, that no other soap is so carefully made, and certainly none is so critically examined before leaving the hands of the makers.

Physicians, therefore, have a *guarantee* that their patients will obtain an *absolutely pure, neutral and correctly made* article when they order "**ALTHENE SKIN SOAP.**"

Comparatively speaking, this is a new soap, having been first offered for sale in January, 1887; therefore, the druggists in some sections may not be familiar with it. Where such is the case, they can easily procure it from their wholesale druggist or direct from

J. W. CAMPION & CO.,
916 Filbert Street, Phila.

Chemist's Certificate.

I am pleased to inform you that I have made a chemical analysis of your "ALTHENE SKIN SOAP," the samples having been selected by me from the general stock, and I find the same to be an absolutely pure and correctly made Soap, containing no impure fat-acids, no excess of alkali, and no irritating mineral or organic substances. The process of manufacture is so conducted as to produce a perfectly neutral Soap, eminently fitted for all toilet purposes. Yours,

HENRY LEFFMANN, M.D.,

Professor of Chemistry in the Pennsylvania College of Dental Surgery, and in the Wagner Free Institute of Science, Hygienist and Food Inspector to the State Board of Agriculture.

The Medical Register of April 9th, 1887, under the head of "Reports, Analyses," etc., refers to this Soap in the following language :

From a personal examination of a number of specimens of "ALTHENE SKIN SOAP," we have found it to be the purest and best Toilet Soap we have ever met with. It is entirely free from adulteration, impure fat-acids or any excess of alkali. It forms, with water, freely a thick lather, which possesses most excellent detergent properties, and is the most effective and practical of all soaps for cleansing the skin, the surface remaining smooth, soft, and most comfortable after its application. The most delicate skin, even of infants, can bear its use, often with the greatest benefit. In dandruff, irritable conditions of the scalp and skin, it affords decided relief. It is also a most effective soap to employ in almost all

chronic affections of the skin, and in bringing about a clear, brilliant complexion. Whether intended for the toilet, nursery, or sick-room, we recommend most highly the "**ALTHENE SKIN SOAP.**"

I have made a close examination of your "**ALTHENE SKIN SOAP.**" and can say that it is entirely free from impurities. It imparts to the skin, after washing, a softness unequalled by any other Soap. I have used it in skin eruptions with excellent results, relieving the disagreeable itching. I have also used it in washing chronic ulcers; in fact, using it in all cases where I formerly employed Castile Soap. I cannot but recommend it most highly.

EUGENE P. BERNARDY, M.D.,
No. 221 S. Seventeenth St., Phila.

The following case, cited by Dr. WAUGH, *Professor of Principles and Practice of Medicine and Clinical Medicine, in the Medico-Chirurgical College of Philadelphia,* is especially interesting :

DEAR SIRS:

A case has recently occurred in my practice which so well illustrates the importance of using perfectly pure soaps, that I will give it to you.

A gentlemen called on me complaining of fetid feet. He stated that he scrubbed them twice a day, using a nail-brush; but the more he washed the worse was the odor.

I asked him what soap he used, but he did not know.

My advice was to wash his feet once daily, and to use "ALTHENE SKIN SOAP" alone. The result was complete relief from his unpleasant ailment. I attribute the bromidrosis to irritation of the sweat-glands caused by the impurities contained in soaps made from rancid or decomposing fats.

I think that if the attention of physicians were directed to the subject, it would be found that the quality of the soap used in washing wounds, etc., has much to do with the difficulty often experienced in accomplishing a cure.

Yours, very truly,
WM. WAUGH, M.D.

"ALTHENE SKIN SOAP" has been used by my family since its introduction to the public. On account of the known purity of the materials used in its manufacture, and skill in combination, I know of no Soap so useful for the general toilet, nursery or sick-room. It is particularly agreeable to those having an easily irritated skin.

MALCOLM MACFARLAN, M.D.,
1805 Chestnut Street, Phila.

I have found "ALTHENE SKIN SOAP" to be perfectly bland and non-irritating. Physicians will find it excellent for the tender skin of infants and delicate ladies, for cleansing in all skin diseases, and for general toilet purposes.

C. F. TAYLOR, M.D.,
Editor of *The Medical World*.

The "ALTHENE SKIN SOAP" you sent me some time since has given me entire satisfaction. In my opinion it is the best on the market.

W. H. BOBBITT, M.D.,
Raleigh, N. C.



None genuine without the above trade-mark
and this signature on the wrappers:

J. W. Campion & Co.



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